

Update *on* Alaska Gas Commercialization



9th Annual Alaska Oil & Gas Congress

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Anchorage, AK

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Alaska Department of Natural Resources

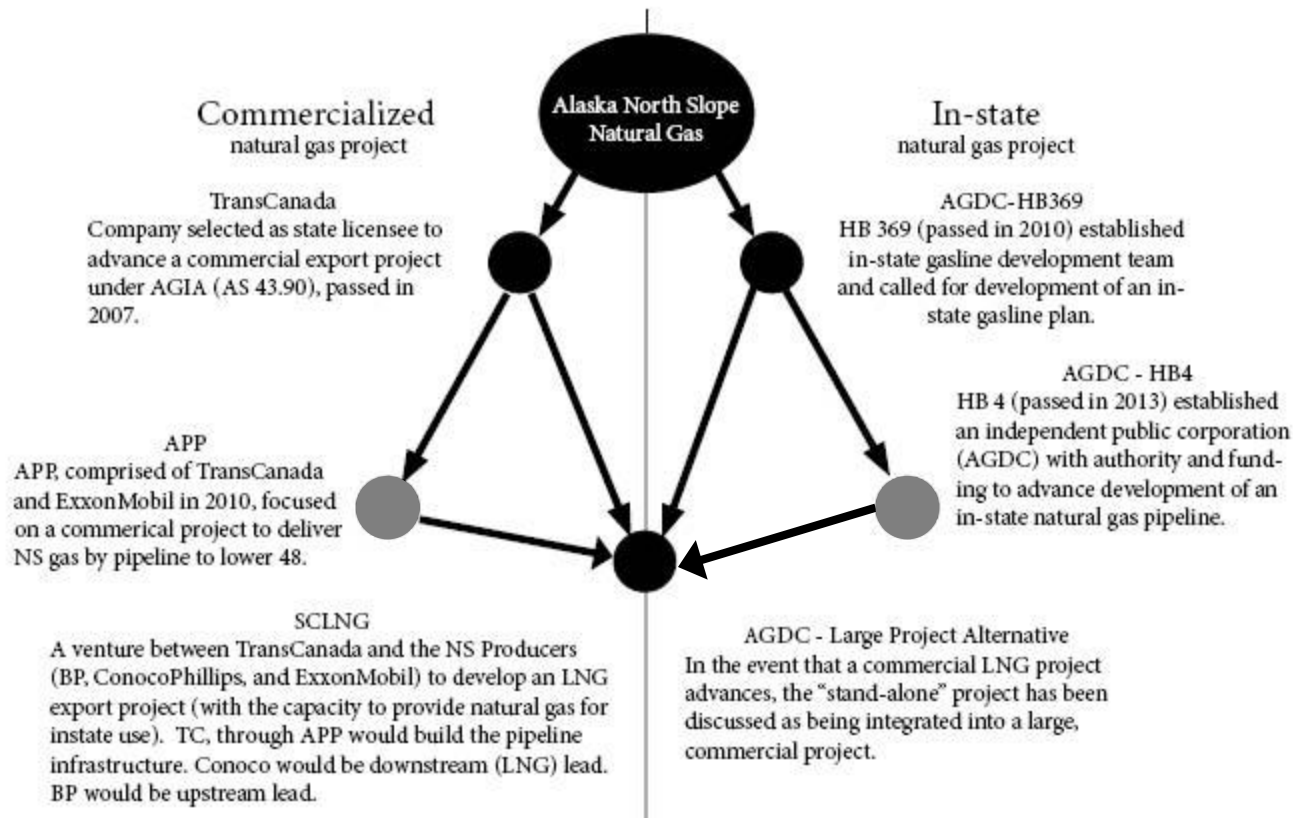


Alaska SCLNG Plant - Conceptual Layout
From SCLNG Overview for Alaska
Legislators, May 2013

COMMERCIALIZING NORTH SLOPE GAS

- STATE OF ALASKA BACKED EFFORTS -

Working together to develop Alaska North Slope natural gas for Alaska's fiscal and instate energy needs



COMMERCIALIZING NORTH SLOPE GAS

- 2012 AND 2013 PROGRESS -

2012 Accomplishments

- **Producers align on an Alaska LNG Project:**

ExxonMobil, ConocoPhillips, BP, and TransCanada formally aligned and are working together to evaluate a LNG project from Southcentral Alaska; the companies had previously pursued different directions on Alaska's gas.

- **Development of multi-billion dollar Point Thomson field:**

Point Thomson holds approximately 8 TCF of known gas reserves, plus hundreds of millions of barrels of liquid condensates and oil; significant hydrocarbon production will be online within three years.

2013 Accomplishments

- **State of Alaska achieves significant tax and permitting reform:**

Oil tax reform incentivizes more production and has fueled new discoveries and investment.

- **Producers select concept on an Alaska pipeline to tidewater:**

Concept selection includes a summary of major project components, including the gas pipeline, gas treatment facilities and the liquefaction, storage and terminal facilities. This project would be one of the largest LNG projects in the world.

- **Producers undergoing a full summer field season:**

As part of a staged pre-FEED effort, summer field work and other activities are underway, which will enable the companies to evaluate major future engineering commitments.

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- PROPOSED ALASKA LNG PROJECT CONCEPT SELECTION -

Pipeline	Diameter: 42"
	Design Rate¹: 3 – 3.5 billion cubic feet
	Length: ~800 miles (primarily underground)
	Compressor Stations: up to 8
Gas Treatment Plant	Location: North Slope, near Prudhoe Bay
	Footprint: 150 – 250 acres
Liquefaction Plant	Capacity¹: 15 – 18 million tons per annum (MTA)
	Facility: 3 trains
	Footprint: 400 – 600 acres
Storage and Loading	LNG Storage Tanks: 2 tanks @ 160,000 cubic meters per tank
	Terminal: 1 loading jetty with 2 berths
State Off-takes	Off-takes: 5 points along pipeline route
	Design Rate: 250 – 500 million standard cubic feet per day, based on demand
Capital Investment	Estimate²: \$45 – \$65 USD-Billion

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- CONCEPT SELECTION: UPSTREAM -

SCLNG Concept Summary - Upstream

PTU (62 miles east of PBU/GTP area)

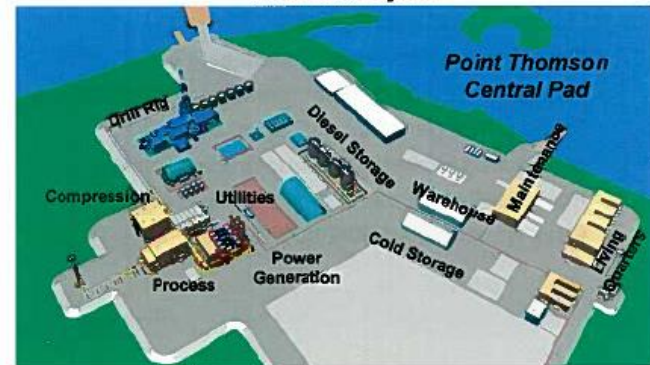
- Initial Production System (IPS) project in progress - 2016 SU
- Preliminary SCLNG design basis for PTU:
 - Leverage IPS facilities, add fourteen new wells
 - Add new gas facilities to existing central pad / facilities
 - New 30" gas line from PTU to GTP in Prudhoe Bay
 - Peak workforce – 500-1,500 people

PBU Tie-in (adjacent to proposed GTP location)

- Installation / tie-in managed by Prudhoe Bay Operator
 - Tie into existing CGF, deliver gas to new Gas Treatment Plant
 - Gas project / deliveries tied to future PBU operations
- Preliminary plan is to inject CO₂ using existing injection systems as appropriate

Alaska SCLNG Project Concept Information

PTU Field Layout



PBU Central Gas Facility Tie-in



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- CONCEPT SELECTION: MIDSTREAM -

SCLNG - Concept Summary - Midstream

NS Gas Treatment Plant

- Designed to remove gas impurities
- Four amine trains with compression, dehydration and chilling
- Prime power generation (5 units, 54kHP)
- All required utilities, infrastructure and camps
- Facility will be modularized, sealifted to location
- Peak workforce – 500-2,000 people

Gas Pipeline and Compression Stations

- 800+ mile 42" x80 pipeline
- 3-3.5 billion cubic feet gas per day
- Eight compressor stations (30kHP each)
- Pipeline contents will be treated gas, impurities removed
- Designed to manage continuous and discontinuous permafrost regions
- Expansion potential with additional compression if appropriate
- Five off-take points for Alaska gas delivery
- Peak workforce – 3,500 - 5,000 people

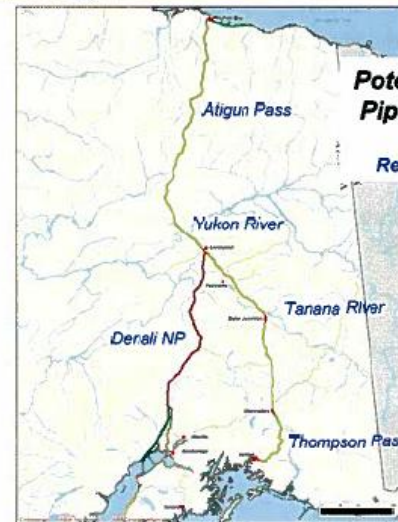
Alaska SCLNG Project Concept Information

NS Gas Treatment Plant Design



Potential SCLNG Pipeline Routes

Reference Points



Work Product In Progress

COMMERCIALIZING NORTH SLOPE GAS

- CONCEPT SELECTION: DOWNSTREAM -

SCLNG - Concept Summary – Downstream

Alaska SCLNG Project
Concept Information

LNG Plant and Storage

- Three 5.8 million tons per annum (MTA) LNG trains
 - Plant receives 2.2 - 2.5 billion cubic feet per day to liquefy
 - LNG production varies with ambient temp (4.9 - 6.3 MTA)
 - Small volume of stabilized condensate produced (~1,000 bbl/day)
- Integrated utility system with all utilities on site
- Two-three 160,000 cubic meter LNG storage tanks
- Peak workforce – 3,500 – 5,000 people

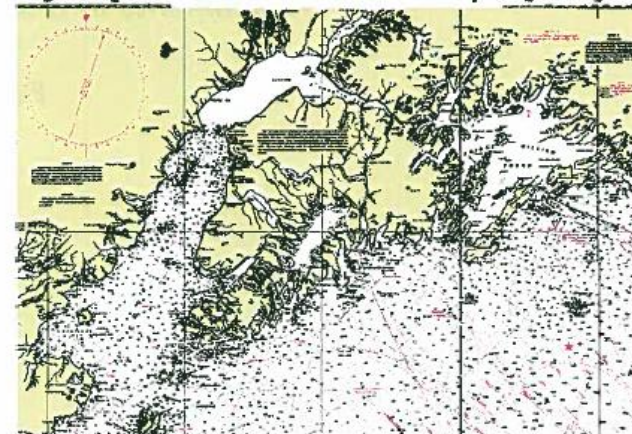
SCLNG Plant and Storage



Marine Offloading Facility

- Conventional jetty and trestle design
- Two berths
- Design based on 15-20 LNG carriers
- Marine support system includes required tugs, security boats
- Peak workforce – 1,000 – 1,500 people

South Central Marine Map



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- SUMMER 2013 FIELD SEASON -

- Gathering baseline information to support engineering design, cost estimation, execution and logistics planning.
- Data will support the development of a FERC application and the numerous federal, state and local construction permits.
- Civil surveys are complete.



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- SUMMER 2013 FIELD SEASON -

Cultural Resource Surveys

- 5,052 acres of surveys completed
- Pedestrian surface inspection
- Shovel testing



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- SUMMER 2013 FIELD SEASON -

Stream Hydrology Studies

- 26 streams surveyed along the proposed pipeline route
- Emphasis on anadromous waterbodies
- Stream bank characterization
- Discharge assessment



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- SUMMER 2013 FIELD SEASON -

Stream Fisheries Studies

- 13 streams surveyed
- Characterization of fish distribution and habitat
- Fish sampling
- Water quality parameters

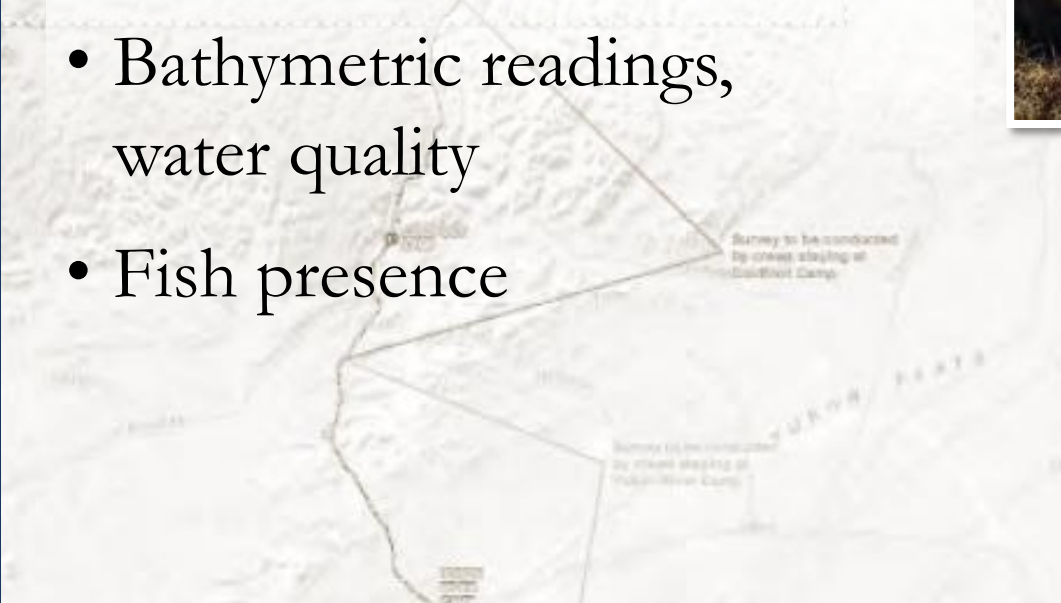


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- SUMMER 2013 FIELD SEASON -

Lake Studies

- 17 lakes surveyed
- Evaluating potential to support ice road and ice pad construction
- Bathymetric readings, water quality
- Fish presence



MOVING FORWARD

- Steady progress on the State's next mega project
 - But companies are not moving as quickly as Alaskans expect—pre-FEED commercial agreement has not been achieved
- Financial and marketing picking up speed and focus
- Field work and engineering is progressing
- Need to accelerate progress, coordinate activities and ensure that we are strategically representing Alaskan's interests

